

CLAIMS

What is claimed is:

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1. A biasing circuit for biasing a device used for amplifying a radio frequency (RF) signal, the RF signal comprising an amplitude modulated carrier having an amplitude modulation bandwidth, the biasing circuit comprising:
- an active element having an input and an output, the active element having a relatively low output impedance over a bandwidth comparable to the amplitude modulation bandwidth; and
- a resistor having an input connected to the active element output, wherein a direct current (DC) bias voltage applied at the active element input produces a fixed DC voltage at the resistor
- 10 input.
2. The biasing circuit of claim 1, wherein the active element comprises an operational amplifier.
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3. The biasing circuit of claim 2, wherein the operational amplifier is configured as an inverting amplifier.
4. The biasing circuit of claim 1, wherein the active element has a frequency bandwidth encompassing the amplitude modulation bandwidth of the RF signal.
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5. The biasing circuit of claim 1, wherein the device is a field effect transistor having a gate, and wherein the resistor has an output connected to the transistor gate.

6. The biasing circuit of claim 5, wherein the transistor is a GaAs transistor.

7. An amplifier circuit for amplifying a radio frequency (RF) signal, the RF signal comprising an amplitude modulated carrier having an amplitude modulation bandwidth, comprising:

5 a transistor having an input for receiving the RF signal, an output, and a common element;

a direct current (DC) bias voltage source; and

a biasing circuit, the biasing circuit comprising

10 an active element having an input connected to the DC bias voltage source and an output, the active element providing a relatively low output impedance over a bandwidth comparable to the amplitude modulation bandwidth of the RF signal, and

15 a resistor having an input connected to the active element output and an output connected to the transistor input, such that the DC bias voltage source provides a fixed DC voltage at the resistor input, regardless of voltage fluctuations of the RF signal received at the transistor.

8. The amplifier circuit of claim 7, wherein the active element comprises an operational amplifier.

9. The amplifier circuit of claim 8, wherein the operational amplifier is configured as an inverting amplifier.

10. The amplifier circuit of claim 7, wherein the active element has a frequency bandwidth encompassing the amplitude modulation bandwidth of the RF signal.

11. The amplifier circuit of claim 7, wherein the transistor is a field effect transistor and the transistor input is a gate.

12. The amplifier circuit of claim 11, wherein the transistor is a GaAs transistor.

13. A wireless communication device comprising an amplifier circuit for amplifying a radio frequency (RF) signal, the RF signal comprising an amplitude modulated carrier having an amplitude modulation bandwidth, the amplifier circuit comprising:

a transistor having an input for receiving the RF signal, an output, and a common element;

a direct current (DC) bias voltage source; and

a biasing circuit, the biasing circuit comprising

an active element having an input connected to the DC bias voltage source and an output, the active element providing a relatively low output impedance over a bandwidth comparable to the amplitude modulation bandwidth of the RF signal, and

a resistor having an input connected to the active element output and an output connected to the transistor input, such that the DC bias voltage source provides a fixed DC voltage at the resistor input, regardless of voltage fluctuations of the RF signal received at the transistor.

14. The wireless communication device of claim 13, wherein the active element comprises an operational amplifier.

15. The wireless communication device of claim 14, wherein the operational amplifier is configured as an inverting amplifier.

16. The wireless communication device of claim 13, wherein the active element has a frequency bandwidth encompassing the amplitude modulation bandwidth of the RF signal.

17. The wireless communication device of claim 13, wherein the transistor is a field effect transistor and the transistor input is a gate.

18. A gate bias circuit for biasing a gate of a field effect transistor used for amplifying a radio frequency (RF) signal, the RF signal comprising an amplitude modulated carrier having an amplitude modulation bandwidth, the gate biasing circuit comprising:

an active element having an input, an output and an operational amplifier circuit having a relatively low output impedance over a bandwidth comparable to the amplitude modulation bandwidth; and

a resistor having an input connected to the active element output, wherein a direct current (DC) bias voltage applied at the active element input produces a fixed DC voltage at the resistor input.

19. The gate biasing circuit of claim 18, wherein the operational amplifier is configured as an inverting amplifier.

20. The gate biasing circuit of claim 18, wherein the active element has a frequency

5 bandwidth encompassing the amplitude modulation bandwidth of the RF signal.

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amp.